WHAT IS CLAIMED IS:

1. A method for determining a position of a touch on a touch screen, the method comprising:

providing a first sinusoidal signal to a first electrode on a touch screen, the first sinusoidal signal having a frequency;

sensing a signal flowing from the first electrode to generate a first sensed signal;

multiplying the first sensed signal by a second sinusoidal signal to generate a first multiplied signal, the second sinusoidal signal having the frequency, the second sinusoidal signal having a phase;

multiplying the first sensed signal by a third sinusoidal signal to generate a second multiplied signal, the third sinusoidal signal having the frequency, the third sinusoidal signal having a phase different from the phase of the second sinusoidal signal by 90 degrees;

filtering the first multiplied signal to generate a first filtered signal;

filtering the second multiplied signal to generate a second filtered signal;

generating an estimated touch position based on the first filtered signal and the second filtered signal.

2. A method according to claim 1, wherein generating the estimated touch position comprises:

squaring the first filtered signal to generate a squared first filtered signal;

squaring the second filtered signal to generate a squared second filtered signal; and

generating the estimated touch position based on the squared first filtered signal and the squared second filtered signal.

3. A method according to claim 2, wherein generating the estimated touch position comprises:

adding a first component of a correction to the first filtered signal prior to squaring the first filtered signal; and

adding a second component of the correction to the second filtered signal prior to squaring the second filtered signal.

4. A method according to claim 2, wherein generating the estimated touch position further comprises:

adding the squared first filtered signal and the squared second filtered signal to generate a sum signal; and

generating the estimated touch position based on the sum signal.

5. A method according to claim 4, wherein generating the estimated touch position comprises adding a correction to the sum signal.

6. A method according to claim 4, wherein generating the estimated touch position further comprises:

generating a square root signal from the sum signal; and

generating the estimated touch position based on the square root signal.

7. A method according to claim 6, wherein generating the estimated touch position further comprises multiplying the square root signal by two prior to generating the estimated touch position.

8. A method according to claim 1, further comprising:

providing a fourth sinusoidal signal to a second electrode on the touch screen, the fourth sinusoidal signal having the frequency;

sensing a signal flowing from the second electrode to generate a second sensed signal;

multiplying the second sensed signal by a fifth sinusoidal signal to generate a third multiplied signal, the fifth sinusoidal signal having the frequency, the fifth sinusoidal signal having a phase;

multiplying the second sensed signal by a sixth sinusoidal signal to generate a fourth multiplied signal, the sixth sinusoidal signal having the frequency, the sixth sinusoidal signal having a phase different from the phase of the fifth sinusoidal signal by 90 degrees;

filtering the third multiplied signal to generate a third filtered signal; and

filtering the fourth multiplied signal to generate a fourth filtered signal;

wherein generating the estimated touch position comprises generating the estimated touch position based on the first filtered signal, the second filtered signal, the third filtered signal, and the fourth filtered signal.

9. A method according to claim 8, further comprising:

providing a seventh sinusoidal signal to a third electrode on the touch screen, the seventh sinusoidal signal having the frequency;

sensing a signal flowing from the third electrode to generate a third sensed signal;

multiplying the third sensed signal by an eighth sinusoidal signal to generate a fifth multiplied signal, the eighth sinusoidal signal having the frequency, the eighth sinusoidal signal having a phase;

multiplying the third sensed signal by a ninth sinusoidal signal to generate a sixth multiplied signal, the ninth sinusoidal signal having the frequency, the ninth sinusoidal signal having a phase different from the phase of the eighth sinusoidal signal by 90 degrees;

filtering the fifth multiplied signal to generate a fifth filtered signal; and

filtering the sixth multiplied signal to generate a sixth filtered signal;

providing a tenth sinusoidal signal to a fourth electrode on the touch screen, the tenth sinusoidal signal having the frequency;

sensing a signal flowing from the fourth electrode to generate a fourth sensed signal;

multiplying the fourth sensed signal by an eleventh sinusoidal signal to generate a seventh multiplied signal, the eleventh sinusoidal signal having the frequency, the eleventh sinusoidal signal having a phase;

multiplying the fourth sensed signal by a twelfth sinusoidal signal to generate an eighth multiplied signal, the twelfth sinusoidal signal having the frequency, the twelfth sinusoidal signal having a phase different from the phase of the eleventh sinusoidal signal by 90 degrees;

filtering the seventh multiplied signal to generate a seventh filtered signal; and

filtering the eighth multiplied signal to generate an eighth filtered signal;

wherein generating the estimated touch position comprises generating the estimated touch position based on the first filtered signal, the second filtered signal, the third filtered signal, the fourth filtered signal, the fifth filtered signal, the sixth filtered signal, the seventh filtered signal, and the eighth filtered signal.

10. A method according to claim 9, wherein the first sinusoidal signal, the fourth sinusoidal signal, the seventh sinusoidal signal, and the tenth sinusoidal signal comprise the same signal.

11. A method according to claim 1, wherein generating the estimated touch position comprises:

generating at least one estimate of an amplitude of the signal flowing from the first electrode based on the first filtered signal and the second filtered signal; and

generating the estimated touch position based on the at least one estimate of the amplitude.

12. A method according to claim 1, further comprising determining whether a person touched the touch screen based on the first filtered signal and the second filtered signal.

13. A method according to claim 12, wherein determining whether the person touched the touch screen comprises:

generating at least one estimate of an amplitude of the signal flowing from the first electrode based on the first filtered signal and the second filtered signal; and

determining whether the person touched the touch screen based on the at least one estimate of the amplitude.

14. A method according to claim 1, wherein filtering the first multiplied signal comprises filtering the first multiplied signal with a first low pass filter having a cutoff frequency, wherein the cutoff frequency is less than twice the frequency, and wherein the first low pass filter is adapted to attenuate components of the first multiplied signal at twice the frequency by at least three decibels;

wherein filtering the second multiplied signal comprises filtering the second multiplied signal with a second low pass filter having the cutoff frequency, wherein the second low pass filter is adapted to attenuate components of the second multiplied signal at twice the frequency by at least three decibels.

15. A method according to claim 1, further comprising adjusting the amplitude of the first sinusoidal signal provided to the first electrode based on the first filtered signal and the second filtered signal.

16. An apparatus for determining a position of a touch on a touch screen, comprising:

a first sinusoid generator coupled to a first electrode of a touch screen, the first sinusoid generator adapted to generate a first sinusoidal signal having a frequency;

a first sensor coupled to the first electrode to generate a first sensed signal indicative of a signal flowing from the first electrode;

a first multiplier having a first input coupled to the first sensor, a second input coupled to receive a second sinusoidal signal having the frequency and a phase, and an output;

a second multiplier having a first input coupled to the first sensor, a second input coupled to receive a third sinusoidal signal having the frequency and a phase 90 degrees out of phase with the phase of the second sinusoidal signal, and an output;

a first low pass filter having an input and an output, the input of the first low pass filter coupled to the output of the first multiplier;

a second low pass filter having an input and an output, the input of the second low pass filter coupled to the output of the second multiplier;

a first amplitude calculator having a first input, a second input, and an output, wherein the first input of the first amplitude calculator is coupled to the output of the first low pass filter, and wherein the second input of the first amplitude calculator is coupled to the output of the second low pass filter; and

a touch position calculator having a first input coupled to the output of the amplitude calculator, wherein the touch position calculator is adapted to generate an estimate of a touch position based on the output of the amplitude calculator.

17. An apparatus according to claim 16, wherein the first amplitude calculator comprises:

a first squaring calculator having an input and an output, wherein the input of the first squaring calculator is coupled to the output of the first low pass filter;

a second squaring calculator having an input and an output, wherein the input of the second squaring calculator is coupled to the output of the second low pass filter;

a first summer having a first input and a second input, wherein the first input of the first summer is coupled to the output of the first squaring calculator, and wherein the second input of the first summer is coupled to the output of the second squaring calculator.

18. An apparatus according to claim 17, wherein the first amplitude calculator further comprises:

a second summer having a first input, a second input, and an output, wherein the first input of the second summer is coupled to the output of the first low pass filter, wherein the second input of the second summer is coupled to receive a first component of a correction, and wherein the output of the second summer is coupled to the input of the first squaring calculator; and

a third summer having a first input, a second input, and an output, wherein the first input of the third summer is coupled to the output of the second low pass filter, wherein the second input of the third summer is coupled to receive a second component of the correction, and wherein the output of the third summer is coupled to the input of the second squaring calculator.

19. An apparatus according to claim 17, wherein the first amplitude calculator further comprises a square root calculator having an input coupled to an output of the first summer.

20. An apparatus according to claim 19, wherein the first amplitude calculator further comprises a multiply-by-two calculator having an input coupled to an output of the square root calculator.

21. An apparatus according to claim 17, wherein the first amplitude calculator further comprises:

a first analog-to-digital converter (ADC) having an input and an output, wherein the input of the first ADC is coupled to the output of the first low pass filter, and wherein the output of the first ADC is coupled to the input of the first squaring calculator; and

a second ADC having an input and an output, wherein the input of the second ADC is coupled to the output of the second low pass filter, and wherein the output of the second ADC is coupled to the input of the second squaring calculator.

22. An apparatus according to claim 21, wherein the first analog-to-digital converter (ADC) and the second ADC comprise a single time-shared ADC.

23. An apparatus according to claim 21, wherein the first amplitude calculator comprises a controller operatively coupled to the first analog-to-digital converter (ADC) and the second ADC, the controller including a processor and a memory operatively coupled to the processor,

the controller being programmed to calculate first square values based on outputs of the first ADC;

the controller being programmed to calculate second square values based on outputs of the second ADC; and

the controller being programmed to calculate sum values based on the first square values and the second square values.

24. An apparatus according to claim 23, wherein the controller is further programmed to calculate square root values based on the sum values.

25. An apparatus according to claim 24, wherein the controller is further programmed to multiply the square root values by two.

26. An apparatus according to claim 23, wherein the controller is further programmed to add a first component of a correction value to the outputs of the first analog-to-digital converter (ADC); and

wherein the controller is further programmed to add a second component of the correction value to the outputs of the second ADC.

27. An apparatus according to claim 16, further comprising an analog-to-digital converter (ADC) having an input and an output, wherein the input of the ADC is coupled to the first sensor, and wherein the output of the ADC is coupled to the first input of the first multiplier and to the first input of the second multiplier.

28. An apparatus according to claim 16, further comprising:

a second sinusoid generator coupled to a second electrode of the touch screen, the second sinusoid generator adapted to generate a second sinusoidal signal having the frequency;

a second sensor coupled to the second electrode to generate a second sensed signal indicative of a signal flowing from the second electrode;

a third multiplier having a first input coupled to the second sensor, a second input coupled to receive a fourth sinusoidal signal having the frequency and a phase, and an output;

a fourth multiplier having a first input coupled to the second sensor, a second input coupled to receive a fifth sinusoidal signal having the frequency and a phase 90 degrees out of phase with the phase of the fourth sinusoidal signal, and an output;

a third low pass filter having an input and an output, the input of the third low pass filter coupled to the output of the third multiplier;

a fourth low pass filter having an input and an output, the input of the fourth low pass filter coupled to the output of the fourth multiplier;

a second amplitude calculator having a first input, a second input, and an output, wherein the first input of the second amplitude calculator is coupled to the

output of the third low pass filter, and wherein the second input of the second amplitude calculator is coupled to the output of the fourth low pass filter;

wherein the touch position calculator includes a second input coupled to the output of the second amplitude calculator, wherein the touch position calculator is adapted to generate an estimate of a touch position based on the output of the first amplitude calculator and the second amplitude calculator.

29. An apparatus according to claim 28, further comprising:

a third sinusoid generator coupled to a third electrode of the touch screen, the third sinusoid generator adapted to generate a third sinusoidal signal having the frequency;

a third sensor coupled to the third electrode to generate a third sensed signal indicative of a signal flowing from the third electrode;

a fifth multiplier having a first input coupled to the third sensor, a second input coupled to receive a sixth sinusoidal signal having the frequency and a phase, and an output;

a sixth multiplier having a first input coupled to the third sensor, a second input coupled to receive a seventh sinusoidal signal having the frequency and a phase 90 degrees out of phase with the phase of the sixth sinusoidal signal, and an output;

a fifth low pass filter having an input and an output, the input of the fifth low pass filter coupled to the output of the fifth multiplier;

a sixth low pass filter having an input and an output, the input of the sixth low pass filter coupled to the output of the sixth multiplier;

a third amplitude calculator having a first input, a second input, and an output, wherein the first input of the third amplitude calculator is coupled to the output of the fifth low pass filter, and wherein the second input of the third amplitude calculator is coupled to the output of the sixth low pass filter;

a fourth sinusoid generator coupled to a fourth electrode of the touch screen, the fourth sinusoid generator adapted to generate a fourth sinusoidal signal having the frequency;

a fourth sensor coupled to the fourth electrode to generate a fourth sensed signal indicative of a signal flowing from the fourth electrode;

a seventh multiplier having a first input coupled to the fourth sensor, a second input coupled to receive an eighth sinusoidal signal having the frequency and a phase, and an output;

an eighth multiplier having a first input coupled to the fourth sensor, a second input coupled to receive a ninth sinusoidal signal having the frequency and a phase 90 degrees out of phase with the phase of the eighth sinusoidal signal, and an output;

a seventh low pass filter having an input and an output, the input of the seventh low pass filter coupled to the output of the seventh multiplier;

an eighth low pass filter having an input and an output, the input of the eighth low pass filter coupled to the output of the eighth multiplier;

a fourth amplitude calculator having a first input, a second input, and an output, wherein the first input of the fourth amplitude calculator is coupled to the output of the seventh low pass filter, and wherein the second input of the fourth amplitude calculator is coupled to the output of the eighth low pass filter;

wherein the touch position calculator includes a third input coupled to the output of the third amplitude calculator and a fourth input coupled to the output of the fourth amplitude calculator, wherein the touch position calculator is adapted to generate an estimate of a touch position based on the output of the first amplitude calculator, the second amplitude calculator, the third amplitude calculator, and the fourth amplitude calculator.

30. An apparatus according to claim 29, wherein a single sinusoid generator comprises the first sinusoid generator, the second sinusoid generator, the third sinusoid generator, and the fourth sinusoid generator.

31. A method for facilitating game play via a gaming apparatus, the gaming apparatus comprising a value input device, a display unit, and a touch screen unit, the gaming method comprising:

receiving a value input from a player via the value input device;

causing the display unit to display a first game display relating to one of the following games: poker, blackjack, slots, keno or bingo;

receiving player input data via the touch screen unit, including:

providing a first sinusoidal signal to a first electrode on a touch screen associated with the touch screen unit, the first sinusoidal signal having a frequency;

sensing a signal flowing from the first electrode to generate a first sensed signal;

multiplying the first sensed signal by a second sinusoidal signal to generate a first multiplied signal, the second sinusoidal signal having the frequency, the second sinusoidal signal having a phase;

multiplying the first sensed signal by a third sinusoidal signal to generate a second multiplied signal, the third sinusoidal signal having the frequency, the third sinusoidal signal having a phase different from the phase of the second sinusoidal signal by 90 degrees;

filtering the first multiplied signal to generate a first filtered signal;

filtering the second multiplied signal to generate a second filtered signal;

generating an estimated touch position based on the first filtered signal and the second filtered signal; and

determining a value payout associated with an outcome of the game.

32. A method according to claim 31, wherein generating the estimated touch position comprises:

squaring the first filtered signal to generate a squared first filtered signal;

squaring the second filtered signal to generate a squared second filtered signal; and

generating the estimated touch position based on the squared first filtered signal and the squared second filtered signal.

33. A method according to claim 32, wherein generating the estimated touch position comprises:

adding a first component of a correction to the first filtered signal prior to squaring the first filtered signal; and

adding a second component of the correction to the second filtered signal prior to squaring the second filtered signal.

34. A method according to claim 32, wherein generating the estimated touch position further comprises:

adding the squared first filtered signal and the squared second filtered signal to generate a sum signal; and

generating the estimated touch position based on the sum signal.

35. A method according to claim 34, wherein generating the estimated touch position further comprises:

generating a square root signal from the sum signal; and

generating the estimated touch position based on the square root signal.

36. A method according to claim 35, wherein generating the estimated touch position further comprises multiplying the square root signal by two prior to generating the estimated touch position.

37. A method according to claim 31, wherein receiving player input data via the touch screen unit further includes:

providing a fourth sinusoidal signal to a second electrode on the touch screen, the fourth sinusoidal signal having the frequency;

sensing a signal flowing from the second electrode to generate a second sensed signal;

multiplying the second sensed signal by a fifth sinusoidal signal to generate a third multiplied signal, the fifth sinusoidal signal having the frequency, the fifth sinusoidal signal having a phase;

multiplying the second sensed signal by a sixth sinusoidal signal to generate a fourth multiplied signal, the sixth sinusoidal signal having the frequency, the sixth sinusoidal signal having a phase different from the phase of the fifth sinusoidal signal by 90 degrees;

filtering the third multiplied signal to generate a third filtered signal; and

filtering the fourth multiplied signal to generate a fourth filtered signal;

wherein generating the estimated touch position comprises generating the estimated touch position based on the first filtered signal, the second filtered signal, the third filtered signal, and the fourth filtered signal.

38. A gaming apparatus, comprising:

a display unit;

a value input device;

a touch screen unit including:

a sinusoid generator coupled to a first electrode of a touch screen, the sinusoid generator adapted to generate a first sinusoidal signal having a frequency;

a first sensor coupled to the first electrode to generate a first sensed signal indicative of a signal flowing from the first electrode;

a first multiplier having a first input coupled to the first sensor, a second input coupled to receive a second sinusoidal signal having the frequency and a phase, and an output;

a second multiplier having a first input coupled to the first sensor, a second input coupled to receive a third sinusoidal signal having the frequency and a phase 90 degrees out of phase with the phase of the second sinusoidal signal, and an output;

a first low pass filter having an input and an output, the input of the first low pass filter coupled to the output of the first multiplier;

a second low pass filter having an input and an output, the input of the second low pass filter coupled to the output of the second multiplier;

a first amplitude calculator having a first input, a second input, and an output, wherein the first input of the first amplitude calculator is coupled to the output of the first low pass filter, and wherein the second input of the first amplitude calculator is coupled to the output of the second low pass filter; and

a touch position calculator having a first input coupled to the output of the amplitude calculator, wherein the touch position calculator is adapted to generate an estimate of a touch position based on the output of the amplitude calculator;

a main controller operatively coupled to the display unit, the value input device, and the touch screen unit, the main controller comprising a main processor and a main memory operatively coupled to the main processor,

the main controller being programmed to receive value input data via the value input device,

the main controller being programmed to cause the display unit to generate a first game display relating to one of the following games: poker, blackjack, slots, keno or bingo,

the main controller being programmed to receive player input data via the touch screen unit,

the main controller being programmed to determine a value payout associated with an outcome of the game.

39. A gaming apparatus according to claim 38, wherein the first amplitude calculator comprises:

a first analog-to-digital converter (ADC) having an input and an output, wherein the input of the first ADC is coupled to the output of the first low pass filter; and

a second ADC having an input and an output, wherein the input of the second ADC is coupled to the output of the second low pass filter.

40. A gaming apparatus according to claim 39, wherein the touch screen unit comprises a touch screen controller operatively coupled to the first analog-to-digital converter (ADC), the second ADC, and the main controller, the touch screen controller comprising a touch screen processor and a touch screen memory operatively coupled to the touch screen processor,

the touch screen controller being programmed to calculate an estimate of an amplitude of the signal flowing from the first electrode based on outputs of the first ADC and the second ADC.

41. A gaming apparatus according to claim 40, wherein the main controller is programmed calculate a touch position estimate based on the estimate of the amplitude of the signal flowing from the first electrode.

42. A gaming apparatus according to claim 40, wherein the touch screen controller is programmed to calculate a touch position estimate based on the estimate of the amplitude of the signal flowing from the first electrode;

wherein the touch screen controller is programmed to provide the touch position estimate to the main controller.

43. A gaming apparatus according to claim 39, wherein the main controller is operatively coupled to the first analog-to-digital converter (ADC) and the second ADC;

wherein the main controller is programmed to calculate an estimate of an amplitude of the signal flowing from the first electrode based on outputs of the first ADC and the second ADC.

44. A gaming apparatus according to claim 43, wherein the main controller is programmed calculate a touch position estimate based on the estimate of the amplitude of the signal flowing from the first electrode.

45. A gaming apparatus according to claim 38, further comprising an analog-to-digital converter (ADC) having an input and an output, wherein the input of the ADC is coupled to the first sensor, and wherein the output of the ADC is coupled to the first input of the first multiplier and to the first input of the second multiplier.